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longing to the order Ophioglossaceæ. Of the true ferns, one hundred and twenty-nine species fall under the sub-order Polypodiaceæ, one under Ceratopterideæ, two under Hymenophyllaceæ, four under Schizæaceæ, and three under Osmundaceæ. The pamphlet, which contains twelve pages, and bears date of September, 1880, may be obtained for ten cents by addressing the author.—*C. E. B.*

THE ZOOLOGICAL RECORD FOR 1878.[1]—The fifteenth volume of this series is a little more bulky than the fourteenth, an evidence that the cultivators of the science of zoölogy are neither diminishing, nor the number of notices, articles and works contributed by them to journals and transactions. The editor and his assistants are the same as in the preceding volume, and we may feel sure that the omissions and errors inevitable to such work are comparatively few. It is a pity that so large a proportion, indeed almost the entire volume, is taken up with references to descriptions of new genera and species; these seem unfortunately to be as numerous as ever, and to draw away the attention of zoölogists, from the more pressing and legitimate objects of study.

The space devoted to biological and anatomical zoölogy should, it seems to us, be much greater than at present, and be made fully as prominent a topic as purely descriptive work; for this reason the parts on Cœlenterata and Echinodermata, Mollusca and Crustacea, with their analyses of discoveries made in the anatomy and physiology of these animals, is treated with more care and judgment than some other chapters. It seems to us that abstracts of articles in such journals as Siebold and Kölliker's Zeitschrift für wissenschaftliche Zoölogie, Troschel's Archiv für Naturgeschichte, and the similar French journals of Milne-Edwards and Lacaze Duthiers, as well as the *Quarterly Journal of Microscopical Science*, should be fuller, as these periodicals really contain the best material, *i. e.*, that which contributes most to the advancement of the science, and is or should be most eagerly read by students. As the new species get worked up, we may hope that more room will be found for such abstracts, as these are especially desirable for American students, who are exposed to the temptation of forsaking the true objects of zoölogical study, and betaking themselves to the mechanical, and not particularly intellectual work of describing new species and genera, and preparing local faunal lists without reference to future monographical work.

We may add what we have said in notices of previous volumes of this series, that no American student of systematic zoölogy can afford to be without the *Record*, particularly those living away from large libraries.

JOURDAN'S ZOANTHARIAN CORALS OF THE GULF OF MARSEILLES. This important and well illustrated memoir, which appears in the Annales des Sciences Naturelles for 1880, bears particularly on the histology and embryology of the sea-anemonies and the coral Balanophyllia, and should be studied in connection with the brothers Hertwig's nearly contemporaneous work on the histology of the Actiniæ, now brought to a close in the Jena Zeitschrift.

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[1] *The Zoölogical Record for 1878;* being volume fifteenth of the Record of Zoölogical Literature. Edited by E. C. Rye, F. L. S., etc. London, 1880. 8vo.

BASTIAN'S THE BRAIN AS AN ORGAN OF MIND.[1]—One of the author's objects in the preparation of this book was to show that not the brain alone, but the entire nervous system, is the organ of the creature's "mind," and this is shown by reference to the lower animals as well as the vertebrates. He also attacks Ferrier's conclusions as to the localization of the different intellectual powers in the human brain, believing that our knowledge is too imperfect to decide that. But while these are salient points which give tone to the book, the author has presented us with a most useful work upon the nervous systems of animals in general and the correspondence between the structure of the brain of the different classes of vertebrates and their mental powers, which is both novel and useful.

After treating of the nervous system of mollusks, worms and arthropods (crustacea and insects), the author reviews the data derived from a study of the nervous system of invertebrates, and claims that in insects the sense of smell is "marvelously keen," while that of hearing is "developed to a very slight extent." Here we may say that Dr. Bastian has not apparently availed himself of the latest studies on the internal structure of the brain of crustacea and insects by Dietl, Flögel and Krieger, and his own countryman, Mr. E. T. Newton; nor do we think he treats with sufficient detail or comprehensiveness the intellectual powers of insects. He is evidently more at home in the comparative structure of the brain of vertebrates, and here his conclusions and general views appear to us to be well grounded and sound.

As regards the vertebrates, beginning with an account of the brain of fishes and of Amphibia, he goes on to that of the reptiles and birds, and with these as a standard of comparison, pauses to consider the scope of mind in general, of reflex action and unconscious cognition, sensation, ideation and perception, and then discusses consciousness in the lower animals, the nature and origin of instinct, and of nascent reason, emotion, imagination and volition. These subjects will be interesting to those biologists who may be engaged in studying the habits and psychology of animals.

Dr. Bastian regards the whole nervous system as the "organ" of mind, the brain being merely its principal component part. According to his view, instead of supposing that mind and consciousness (in its ordinary acceptation) are co-extensive, mind should include all unconscious nerve actions as well as those

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[1] The Brain as an Organ of Mind. By H. Charlton Bastian. With 184 illustrations. New York, 1880. D. Appleton & Co. 12mo,, pp. 708.